



### CURRICULUM VITAE (CVA)

**IMPORTANT – The Curriculum Vitae cannot exceed 4 pages. Instructions to fill this document are available in the website.**

#### Part A. PERSONAL INFORMATION

CV date

01/12/2021

First name	Alberto		
Family name	Yúfera García		
URL Web			
e-mail	yufera@us.es		
Open Researcher and Contributor ID (ORCID) (*)	0000-0002-1814-6089		

(\*) Mandatory

#### A.1. Current position

Position	Full Professor		
Initial date	April 2012		
Institution	Universidad de Sevilla		
Department/Center	Tecnología Electrónica / Escuela Técnica Superior de Ingeniería Informática		
Country	Spain	Phone number	
Key words	Analog and Mixed Integrated Circuits, Filters, ADCs, Biomedical Circuits, Bioimpedance, Microelectrodes		

#### A.2. Previous positions (research activity interruptions, art. 14.2.b))

Period	Position/Institution/Country/Interruption cause
1989 - 1991	Becario FPI
1991 - 1998	Profesor Asociado / Universidad de Sevilla
1998 - 2012	Profesor Titular de Universidad (TU) / Universidad de Sevilla
2012 -	Catedrático de Universidad / Universidad de Sevilla

#### A.3. Education

PhD, Licensed, Graduate	University/Country	Year
PhD Physics	Universidad de Sevilla	1994
Physics degree	Universidad de Sevilla	1988

#### Part B. CV SUMMARY (max. 5000 characters, including spaces)

My **research** career begins in the integrated circuit design group of the University of Seville, initially  $\mu$ CEUS, and later, TIC-124 and TIC-178 according to the catalog of research groups of the Junta de Andalucía. In it I distinguish three stages: 1) prior to my thesis, 2) prior to obtaining the TU position and 3) after obtaining the TU and CU position to date. During all of them, I have maintained a constant rate of publications both in number and in the quality of the journals and conferences (around 150 papers in total), which has allowed me to obtain 5 six-year terms in a possible 31 years (until 2019). In addition, I have participated continuously in multiple national and international conferences presenting my research results (90 presentations).

I have actively and constantly participated in research projects in all their phases: proposals, development, management, evaluation and dissemination of results, in which a company has generally been involved. I want to highlight my participation in projects financed by the CEE and the coordination effort that this entails, performing functions of principal investigator in



two of them: Microcard and Optonanogen. In total, I have participated in a total of 27 projects, of which 6 were European projects, and in 6 I have been the principal investigator.

I have been and am currently a reviewer of various prestigious magazines and conferences in the Electronic Engineering area, as well as an evaluator of ANEP projects and participated as a member of the TEC2010 panel of experts

As a **teacher** activity, I have taught at least 20 subjects in the area of electronic technology, sensors and electronic instrumentation in various engineering and computer science degrees, and university master's degrees, being currently focused on teaching in Health Engineering degrees, mentioning Biomedical Engineering, as well as in the Master of Biomedical Engineering and Digital Health (MIBSD) of the University of Seville.

At the **management** level, I have held various academic positions: Socrates-Erasmus Coordinator of the ETSII of Seville (2002-2006), Director of International Relations of the Higher Technical School of Computer Engineering of the US (2004-2006), Director of Dto. Of Electronic Technology of the US (2013-2017), and Coordinator of the Doctorate program of Computer Engineering of the US (2012-2018).

As the main value of my researcher CVs, I would highlight the continuity, coherence and integrity of my work, the results of which have been recognized in top-level journals in my area of knowledge. Currently, as a consequence of my scientific work in the design of integrated circuits for biomedical applications, which I lead in my group, I have obtained funding as IP funding in several national and regional calls. The multi-disciplinary potential of this line of research has led to collaborations with other related research groups.

## Part C. RELEVANT MERITS (sorted by typology)

### C.1. Publications

- **Book:** A. Yúfera, G. Huertas and B. Calvo, Design and Application of Biomedical Circuits and Systems, Special Issue Book in Electronics (MDPI). Editors A. Yúfera, G. Huertas and B. Calvo. 120 pages, March 2021. <https://doi.org/10.3390/books978-3-0365-0315-8>.
- **Book chapter:** P. Pérez, J. A. Serrano, P. Daza, G. Huertas and A. Yúfera. A Design Procedure for Sensing Cell Culture Assays Based on ECIS Technique. Chapter 1 in Advances in Biology and Medicine, Vol 189. Pages: 1-35. Ed. Leon V. Berhardt. Nova Science Publishers. 2021.
- **Book chapter:** Pérez, P., Maldonado, A., López Angulo, A. J., Martínez, C., Olmo, A. and Yúfera, A. Remote Sensing of Cell Culture Assays. Chap. 4 In: New Insights in Cell Culture Technology. pp. 135-155. InTech Europe. 2017. ISBN 978-953-51-4875-3, 2017.
- **Book chapter:** J. Aragón, A. González and A. Yúfera, Applying Image Processing to In- Vitro Human Oocytes Characterization. Chapter 3 in "Image Processing: Methods, Applications and Challenges". Editor Vitor Cavalho. Nova Science Publishers Inc, ISBN: 978- 1-62081-844-2. 2012.
- **Book chapter:** A. Yúfera, A. Olmo, P. Daza and D. Cañete, Cell Biometrics Based on Bio-impedance Measurements, chapter 17 in "Advanced Biometric Technologies", INTECH, Girija Chetty and Jucheng Yang editors. pp: 344-366. ISBN 978-953-307-487-0. 2011.
- Scientific paper: E. Rando, P. Pérez, S. F. Scagliusi, J. Medrano, G. Huertas, A. Yúfera, A Plethysmography Capacitive Sensor for Real-Time Monitoring of Volume Changes in Acute Heart Failure. IEEE Transaction on Instrumentation and Measurement. (IF: 3,658, Q1). 2021.
- Scientific paper: P. Pérez, J. Serrano, M. E. Martín, P. Daza, G. Huertas and A. Yúfera: A computer-aided design tool for biomedical OBT sensor tuning in cell-culture assays. Computer programs and Methods in Biomedicine (CPMB), Elsevier. (IF: 3,632, Q1). 2020. <https://doi.org/10.1016/j.cmpb.2020.105840>.
- **Scientific paper:** A. Yúfera, G. Huertas and B. Calvo, Design and Application of Biomedical Circuits and Systems, Electronics (MDPI), Special Issue Editorial paper. 9(11), 1920, Nov 2020. (IF=2,412, Q2). <https://doi.org/10.3390/electronics9111920>.
- **Scientific paper:** A. Serrano, P. Pérez, G. Huertas, A. Yúfera, Alternative general fitting methods for real-time cell-count experimental data processing, IEEE Sensors Journal, Vol. 20, n° 24, Dec, 2020. (IF: 3.073 (Q2)).
- **Scientific paper:** Yuste, J. A. Serrano, A. Maldonado, P. Perez, G. Huertas, S. Pereira, A. Yúfera, F. de la Portilla, Electrical Modelling of the Growth and Differentiation of Skeletal Myoblasts Cell Cultures for Tissue Engineering, Sensors 20(11):3152. 2020. (IF: 3.275 (Q1)).

- **Scientific paper:** García, E., Pérez, P., Olmo, A., Díaz, R, Huertas, G., **Yúfera, A.:** Data-Analytics Modelling of Electrical Impedance Measurements for Cell Culture Monitoring. *Sensors*. 2019. (IF: 3.275 (Q1)).
- **Scientific paper:** J. M. Portillo-Anaya, P. Pérez, A. Olmo, G. Huertas and **A. Yúfera**. Evaluation of Implanted Stent Occlusion Status based on Neointimal Tissue Bioimpedance Simulations. *Journal of Sensors*, Hindawi. (IF: 1,595, (Q3)). 2019.
- **Scientific paper:** P. Villanueva, S. Pereira, A. Olmo, P. Pérez, Y. Yuste, **A. Yúfera**, F. de la Portilla. Electrical Pulse Stimulation of Skeletal Myoblast Cell Cultures with Simulated Action Potential. *Journal of Tissue Engineering and Regenerative Medicine*. 13(7):1265-1269.
- **Scientific paper:** Pérez, G. Huertas; A. Olmo, A. Maldonado-Jacobi, J. A. Serrano, M. E. Martín, P. Daza and **A. Yúfera**. Remote Cell Growth Sensing Using Self-Sustained Bio-Oscillations. *Sensors*, vol. 18 n° 8. Aug. (IF: 3.031 (Q1)). 2018.
- **Scientific paper:** J. A. Serrano, G. Huertas, A. Maldonado-Jacobi, A. Olmo, P. Pérez, M. E. Martín, P. Daza and **A. Yúfera**. An Empirical-Mathematical Approach for Calibration and Fitting Cell-Electrode Electrical Models in Bioimpedance Tests. *Sensors*, vol. 18 n° 7 Jul. (IF: 3.031 (Q1)). 2018.
- **Scientific paper:** Pérez, G. Huertas, A. Maldonado-Jacobi, M. Martín, J. A. Serrano, A. Olmo, P. Daza and **A. Yúfera**, Sensing Cell-Culture Assays with Low-Cost Circuitry. *Scientific Reports*, nature group. (8841). (IF: 4.259 (Q1)). 2018.
- **Scientific paper:** D. Rivas, A. Olmo, J. A. Miguel, M. Martínez, G. Huertas, and **A. Yúfera**: Real-Time Electrical Bioimpedance Characterization of Neointimal Tissue for Stent Applications. *Sensors*. vol. 17, n° 8. (IF: 2.66 (Q1)). 2017.
- **Scientific paper:** G. Huertas, A. Maldonado, **A. Yúfera**, A. Rueda, J. L. Huertas, The Bio-Oscillator: A Circuit for Cell-Culture Assays C, *IEEE Transactions on Circuits and Systems II* 2015, *IEEE Special Issue on Biomedical and Bioelectronic Circuits for Enhanced Diagnosis and Therapy*, vol. 62, pp: 164-168. IF: 2.45 (Q2). 2015.
- **Scientific paper:** M. Cubells-Beltran, C. Reig, A. de Marcellis, E. Figueras, **A. Yúfera**, B. Zadov, E. Paperno, S. Cardoso, F. F. Freitas, Monolithic integration of Giant Magnetoresistance (GMR) devices onto standard processed CMOS dies. *Microelectronics Journal*. Elsevier. vol. 45, pp: 702-707. June. 2014. (IF: 1.32 (Q3))
- **Scientific paper:** **A. Yúfera**, E. Gallego and J. Molina. *ImagCell: A Computer Tool for Cell Culture Image Processing Applications in Bio-Impedance Measurements*. pp: 733-740, in *Software Tools and Algorithms for Biological Systems. Advances in Experimental Medicine and Biology*, AEMB. vol 696. Springer. 2011. IF: 1.96 (Q2).
- **Scientific paper:** P. Daza, A. Olmo, D. Cañete, and **A. Yúfera**. Monitoring Living Cell Assays with Bio-Impedance Sensors. *Sensors and Actuators B: Chemical*. Elsevier, pp: 605-610. vol. 176. January. 2013. IF: 4.10 (Q1).
- **Scientific paper:** **A. Yúfera** and A. Rueda. Design of a CMOS closed-loop system with applications to bioimpedance measurements. *Microelectronics Journal*. Elsevier. vol. 41, pp:231-239. Apr. 2010.
- **Scientific paper:** A. Olmo, B. Buzón, **A. Yúfera** and R. Risco. Use of Electrical Impedance Spectroscopy (EIS) to monitor cryoprotectant concentration in cellular and tissue cryopreservation protocols. *Cryobiology*, ISSN: 0011-2240, vol: 61, n° 3. pp: 392. Elsevier. Dic. 2010.

## C.2. Congress

- Martín, Daniel, Pérez, Pablo, Martín Rubio, María Esther, Daza Navarro, Paula, Serrano, Juan Alfonso, G. Huertas and A. Yúfera. Effects of Electrical Fields on Neuroblastoma (N2A) Cell Differentiation: Preliminary Results. *Comunicación en congreso. 14<sup>th</sup> International Conference on Biomedical electronics and devices. On line Streaming/Viena, Austria. 2021.*
- Pérez, Pablo, Yúfera, Alberto, Serrano, Juan Alfonso, Huertas, Gloria. Designing bioimpedance based sensors for cell cultures test. *XXXV DCIS. Segovia, Spain. 2020.*
- E. Rando, P. Pérez, G. Huertas and A. Yúfera, "A plethysmographic sensor for monitoring volume changes in cardiovascular pathologies," *XXXIV DCIS, Bilbao, Spain, pp. 1-6. 2019.*
- Portillo Anaya, Jose Maria, Pérez, Pablo, Yúfera Garcia, Alberto: Lumen Evaluation in Implanted Stents based on Bioimpedance Simulations. *BioMedEng19. London (UK). 2019.*
- Yaiza Yuste, Juan A Serrano, Alberto Olmo, Andrés Maldonado-Jacobi, Pablo Pérez, Gloria Huertas, Sheila Pereira, Fernando de la Portilla and Alberto Yúfera. Monitoring Muscle Stem Cell Cultures with Impedance Spectroscopy. *BIODEVICES 2018. Volume 1, pp: 96-99. Madeira (Portugal). 2018.*
- Juan A. Serrano, Pablo Pérez, Andrés Maldonado, María Martín, Alberto Olmo, Paula Daza, Gloria Huertas, Alberto Yúfera. Practical Characterization of Cell-Electrode Electrical Models in Bio-Impedance Assays. *BIODEVICES 2018. Volume 1, pp: 100-108. Madeira (Portugal). Jan. 2018.*
- C. Martínez, A. Olmo, G. Huertas, P. Pérez, A. Maldonado-Jacobi, A. Yúfera. A Tracking Algorithm For Cell Motility Assays in CMOS, *IEEE 39<sup>th</sup> EMBC. Jeju (Sud Korea) July, 2017.*

- A. Maldonado, P. Pérez, G. Huertas, A. Yúfera, A. Rueda, J. L. Huertas, From Voltage Oscillations to Tissue-Impedance Measurements. IEEE BioCAS 2015, Atlanta, USA. Oct. 2015.
- G. Huertas, A. Maldonado, A. Yúfera, A. Rueda, J. L. Huertas, Oscillation-Based Test Applied to Cell Culture Monitoring, IEEE Sensors 2013, pp: 842-845. Baltimore, USA.
- C. Reig, M.D. Cubells, A. Cano, J. Sanchis, D. Gilabert, J. Madrenas, A. Yufera, E. Figueras, S. Cardoso, P.P. Freitas. GMR technology: a real candidate for monolithically integrated off-line IC current sensing. Int Conference on Analog VLSI Circuits. AVIC 2012. Valencia (Spain). Oct 2012.
- A. Yúfera, P. Daza and D. Cañete: Modeling Microelectrodes for Real-Time Cell-Culture Monitoring. IEEE Sensors Conference 2011. pp: 936-939. Limerick. (Ireland). Oct. 2011.
- A. Yúfera, P. Daza and D. Cañete: Using Microelectrode Models for Real-Time Cell- Culture Monitoring. 33rd Annual International Conference of IEEE Engineering in Medicine and Biology Society, EMBS 2011. pp: 3983-3986. ISBN: 978-1-4244-4122-8. Boston (USA). Aug-Sep. 2011.
- A. Olmo and A. Yúfera. Computer Simulation of Microelectrode Based Bio-Impedance Measurements with COMSOL. BIODEVICES 2010. pp:178-182. Valencia (Spain) 20-23, Jan. 2010.

### C.3. Research projects

- Sistema de medida y electroestimulación para aplicaciones de diferenciación y motilidad celular (SYMAS). Proyectos de I+D+i en el marco del programa operativo FEDER Andalucía 2014-2020. FEDER2. Referencia: US-1380661, US. 2022-2023. Dotación: 90.000€. **IP**.
- Plan de valorización de un dispositivo de monitorización para pacientes con insuficiencia cardíaca. Fundación para la Innovación y la Prospectiva en Salud: FIPSE 2021, Ref: 3862-21. 2021. Dotación: 30.000 €. **IP**: F.J. Medrano. **Investigador**.
- Sistema de medida y electroestimulación para aplicaciones de diferenciación y motilidad celular. Proyectos I+D+i Junta de Andalucía, Proyectos de Excelencia (Frontera). P18-FR-2038. 2020-2022. Dotación: 79.800€. **IP**.
- Valor pronóstico en tiempo real para la monitorización del volumen mediante medidas de bioimpedancias en pacientes con insuficiencia cardíaca aguda (HEART-FAIL VOLUM). Proyectos de Investigación en Salud (modalidad Proyectos de Desarrollo Tecnológico en Salud). Convocatoria 2019: Acción Estratégica en Salud 2017-2020 (Instituto San Carlos III). Ref: DTS19/00134. 2020-2021. Dotación: 46.200€. **IP**
- Monitorización en Tiempo Real de Variables Hemodinámicas con Stents Inteligentes (Istent) Mediante Sensores Capacitivos y Bioimpedancia. Entidad financiadora: MICINN. Referencia: RTI2018-093512-B-C21.2019-2021. Dotación: 99.704€. **IP**.
- Microsistemas Integrados para la Experimentación con Cultivos Celulares. Entidad financiadora: MICINN. Referencia: TEC2013-46242-C3-1-P. 2014-2017. Dotación: 100.000€. **IP**.
- Microsistemas Integrados para la Experimentación con Cultivos Celulares. Entidad financiadora: Universidad de Sevilla. Ref: V Plan Propio. 2014. Dotación: 3000€. **IP**
- Echevarría para el avance den I+D+I en la sociedad cubana. (D/ 024124/09). Entidad financiadora: Agencia Esp. de Cooperación Internacional para el Desarrollo. CSIC (E). 2010 – 2011. **Investigador**.

### C.4. Contracts, Patents, technological or transfer merits

- Inventores: A. Olmo, A. Yúfera and G. Huertas. Título: Sistema de medida de bioimpedancia para la monitorización en tiempo real de inalámbrica de cultivos celulares basado en circuitos CMOS y modelado eléctrico. N. de solicitud: P201400401. País de prioridad: España. Fecha de prioridad: Mayo 2014. Entidad titular: Universidad de Sevilla. Extensión PCT. Julio 2015.
- Inventores: G. Huertas, A. Maldonado, A. Yúfera. Título: Sistema de medida de bioimpedancia para la monitorización en tiempo real e inalámbrica de cultivos celulares basado en un test de oscilación utilizando circuitos integrados. N. de solicitud: P201400682. País de prioridad: España. Fecha de prioridad Agosto 2014 Entidad titular: Universidad de Sevilla. Extensión PCT. octubre 2015.
- Inventores: P. Villanueva, Y. Yuste, S. Pereira, L. Muntané, F. Padillo, P. Pérez, A. Yúfera, A. Olmo. Título: Cell Count Master. Código de registro: RPISC1912102652546. Solicitud de licencia de Software. Fecha: 10 octubre de 2019. Pais: España. Entidades: IBIS – HUVR – US.
- Primer Premio al Mejor Modelo de Negocio de la Universidad de Sevilla 2021 en la Categoría de Personal Docente e Investigador a la iniciativa Volum-Insuficiencia Cardíaca. XVI Concurso de Ideas y emprendimiento, 2/06/2021. El premio otorgado (9000€) se destina a constitución y capitalización inicial de una EBC–Start-up.
- Primer premio de la II edición del Concurso “EBCite: Investiga, Transfiere, Emprende” de la US, dotado con 9000€, a la iniciativa VOLUM. Oct 2021.
- Creación de BTH: BIOTECHNOLOGY AND HEALTHCARE DEVELOPMENTS, SL, empresa basada en el conocimiento (EBC). Octubre 2021.